

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE J		PAGE OF PAGES 1 52	
2. AMENDMENT/MODIFICATION NO. 0002		3. EFFECTIVE DATE 17-Oct-2005		4. REQUISITION/PURCHASE REQ. NO.		5. PROJECT NO.(If applicable)	
6. ISSUED BY USACE, CONTRACTING DIVISION ATTN: CEMVN-CT, ROOM 172 7400 LEAKE AVE. NEW ORLEANS LA 70118-3651		CODE W912P8		7. ADMINISTERED BY (If other than item 6) See Item 6			
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)				<input checked="" type="checkbox"/> 9A. AMENDMENT OF SOLICITATION NO. W912P8-06-R-0017			
				<input checked="" type="checkbox"/> 9B. DATED (SEE ITEM 11) 14-Oct-2005			
				10A. MOD. OF CONTRACT/ORDER NO.			
				10B. DATED (SEE ITEM 13)			
CODE		FACILITY CODE					
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS							
<input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer <input checked="" type="checkbox"/> is extended, <input type="checkbox"/> is not extended.							
Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning <u> 1 </u> copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.							
12. ACCOUNTING AND APPROPRIATION DATA (If required)							
13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.							
A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.							
B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).							
C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:							
D. OTHER (Specify type of modification and authority)							
E. IMPORTANT: Contractor <input type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) The above numbered solicitation for Lake Pontchartrain and Vicinity, Sheet Pile Repair, London Avenue Canal Floodwall Breach, Robert E. Lee Boulevard, New Orleans, LA, is amended as shown on the attached pages. <div style="text-align: center;">PROPOSAL DUE DATE</div> A PROPOSAL DUE DATE OF 20 OCTOBER 2005, 12:00 PM LOCAL TIME WHERE PROPOSALS ARE DUE, IS ESTABLISHED.							
Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.							
15A. NAME AND TITLE OF SIGNER (Type or print)				16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)			
				TEL: _____ EMAIL: _____			
15B. CONTRACTOR/OFFEROR _____ (Signature of person authorized to sign)		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA BY _____ (Signature of Contracting Officer)		16C. DATE SIGNED 17-Oct-2005	

LAKE PONTCHARTRAIN AND VICINITY, NEW ORLEANS, LOUISIANA
LONDON AVENUE CANAL FLOODWALL BREACH
ROBERT E LEE BOULEVARD
SHEET PILE REPAIR

AMENDMENT 0002

SPECIFICATIONS

MAIN TABLE OF CONTENTS

Page MTC-i. Insert the attached Main Table of Contents, page MTC-i

SF1442

Block 11: Delete “37 calendar days” and replace with “**52** calendar days.”

SECTION 00010

Delete page 00010-1, in its entirety and substitute the attached revised page 00010-1 therefore.

SECTION 00130

Para. 1.4 should read "five non-cost factors" instead of "four non-cost factors."

SECTION 00700

Page 13, paragraph 52.211-10 Delete “(c) complete the entire work ready for use not later than 37 calendar days after the date of receipt of notice to proceed.” and replace with “(c) complete the entire work ready for use not later than **52** calendar days after the date of receipt of notice to proceed.”

SECTION 01100

Page 01100-6, paragraph 4.a.(4). At the end of the sentence, insert the following, “No separate payment will be made for police. The cost shall be distributed among the bid items for the work it is associated with.”

Page 01100-18, paragraphs 24. a. Delete this paragraph in its entirety and insert the following new paragraph.

“a. The sheet pile closure at the Leon C. Simon Boulevard bridge shall remain closed during installation of the PZ-35 sheet pile wall. Opening and closing of the sheet pile closure will be performed and coordinated by the Government.”

Page 01100-18, paragraph 24.c. Delete “PZ-27” and insert “PZ-35”.

Delete the “Soil Boring” data at the end of Section 01100 in its entirety and substitute the attached “Soil Boring” data therefore.

SECTION 01330

Delete the Submittal Register at the end of Section 01330 in its entirety and replace it with the attached new Submittal Register.

SECTION 02075

Delete Section 02075 (Pages 02075-a thru 02075 – 4) in its entirety.

SECTION 02225

Insert new attached Section 02225 (Pages 02225-a thru 02225 –9) in its entirety.

SECTION 02231

Page 02231-1, paragraph 1.1 SCOPE. In the fourth line delete “..., for the removal and disposal of existing steel sheet piling that will interfere with the placement of the repair sheet pile wall, ...”

Page 02231-1, paragraph 1.2 MEASUREMENT AND PAYMENT. In the third line delete “...removal and disposal of existing steel sheet piling to be removed, ...”

SECTION 02318

Insert new attached Section 02318 (Pages 02318-a thru 02318 –2) in its entirety.

SECTION 02411

Delete Section 02411 (Pages 02411-a thru 02411 –9) in its entirety and replace it with attached Section 02411 (Pages 02411-a thru 02411 –9).

DRAWINGS

Make the following pen and ink changes:

1. Dwg. 3 of 5. In quadrant D-2, delete the text “PZ-27” and insert “PZ-35”.
2. Dwg. 4 of 5.
 - a. In quadrant C-3, delete the text “PZ-27” and insert “PZ-35”.
 - b. In quadrant B-4, Note 3., delete the text “2 FOOT THICK...” and insert “1.5 FOOT THICK...”
3. Dwg. 5 of 5. In quadrants A-3 and C-3, delete the text “PZ-27” and insert “PZ-35.”

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01451	Contractor Quality Control	01451-1 thru 12

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02318	Excavation	02318-1 thru 2
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03307	Concrete for Structures	03307-1 thru 16
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SECTION 00010 – BIDDING SCHEDULE

W912P8-06-R-0017

Lake Pontchartrain and Vicinity, Sheet Pile Repair
 London Ave. Canal Floodwall Breach, Robert E. Lee Boulevard,
 New Orleans, LA
 100% Hub Zone Set-Aside

Item	Description	Quantity	Unit	Unit Price	Total
0001	Mobilization and Demobilization	01	LS		
0002	Selective Demolition	01	LS		
0003	Clearing and Grubbing	01	LS		
0004	Graded Stone(Rip Rap)	12,000	TON		
0005	Lightweight Aggregate Fill	2,300	CY		
0006	Bedding Stone	6,000	CY		
0007	Excavation	3,200	CY		
0008	Reinforced Concrete	01	LS		
0009	Piling, Steel Sheet, Type PZ 35	55,300	SF		
0010	Jet Grouting	01	LS		

TOTAL

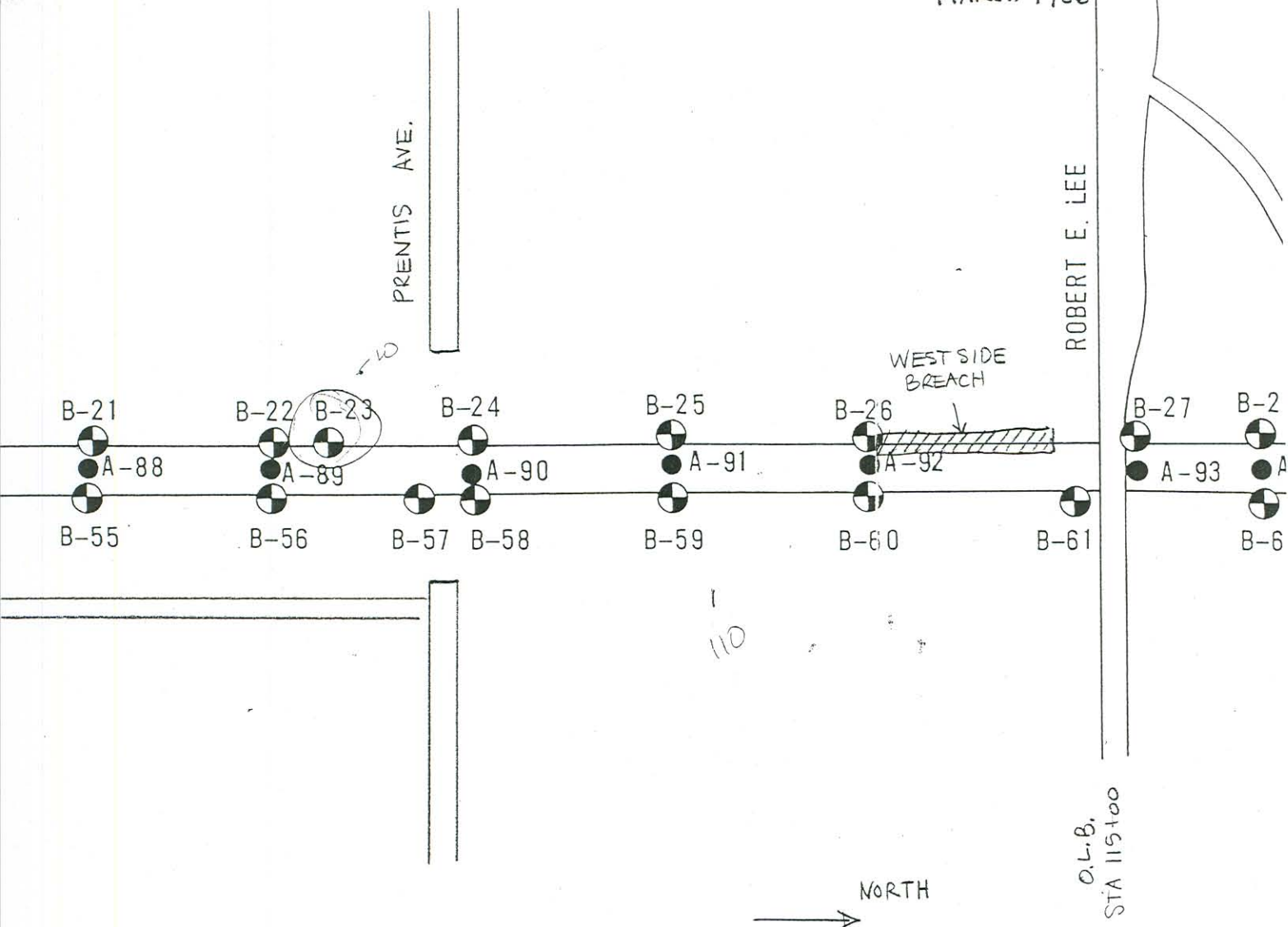
Award will be made as a whole to one bidder.

NOTE 1: Bidders shall furnish unit prices for each items listed in the Schedule of bid items which require unit prices. If the bidder fails to insert a unit price in the appropriate blank for required item(s), but does furnish an extended total, or an estimated amount for such items), the Government shall deem the unit price to be the quotient obtained by dividing the extended amount for that line item by the quantity. IF A BIDDER OMITTS BOTH THE UNIT PRICE AND THE EXTENDED TOTAL OR ESTIMATED AMOUNT FOR ANY ITEM, ITS BID SHALL BE DECLARED NON-RESPONSIVE AND THEREFORE INELIGIBLE FOR AWARD.

NOTE 2: THE NOTICE TO PROCEED (NTP): The successful bidder is advised that performance and payment bonds shall be submitted in accordance with the time frame in block 12B of SF 1442 after Notice of Award. The NTP will be issued immediately after verification of acceptable performance and payment bonds. Within seven (7) days after issuance of the NTP, the Contractor shall initiate a meeting to discuss the submittal process with the Area or Resident Engineer or his authorized representative. Physical work cannot start until the Accident Prevention Program, Contractor Quality Control Plan, and other submittals which may be required, have been submitted and approved and all preliminary meetings called for under the contract, have been conducted.

LONDON AVENUE - ROBERT E. LEE

EE9223
LONDON AVENUE CANAL
LEVEE AND FLOWWALL IMPROVEMENTS
MARCH 1986



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BER 1985
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TOBER 1985

Geotechnical Investigation
London Avenue Canal
Levee and Floodwall Improvements
Orleans Levee Board Project No. 2049-0269
New Orleans, Louisiana

For: The Board of Levee Commissioners of the Orleans Levee District
New Orleans, Louisiana

Burk & Associates, Inc., Engineers, Planners & Environmental Scientists
New Orleans, Louisiana

LOCATION OF BORINGS

(Sheet 1 of 3)

<u>Boring Number</u>	<u>Station Number</u>	<u>Location</u>
B-1	0+85	Levee Crown
B-2	7+60	Levee Crown
B-3	11+60	Levee Crown
B-4	14+70	Levee Crown
B-5	19+60	Levee Crown
B-6	24+60	Levee Crown
B-7	29+60	Levee Crown
B-8	34+60	Levee Crown
B-9	39+60	Levee Crown
B-10	44+60	Levee Crown
B-11	50+35	Levee Crown
B-12	55+00	Levee Crown
B-13	60+00	Levee Crown
B-14	65+00	Levee Crown
B-15	69+85	Levee Crown
B-16	74+75	Levee Crown
B-17	79+75	Levee Crown
B-18	84+75	Levee Crown
B-19	86+35	Levee Crown
B-20	89+75	Levee Crown
B-21	94+75	Levee Crown
B-22	99+75	Levee Crown
B-23	101+20	Levee Crown
B-24	104+75	Levee Crown
B-25	109+75	Levee Crown
B-26	114+75	Levee Crown
B-27	121+35	Levee Toe
B-28	124+75	Levee Toe
B-29	127+50	Levee Toe
B-30	134+00	Levee Toe
B-31	139+00	Levee Toe
B-32	143+00	Levee Toe
B-33	149+00	Levee Toe

Geotechnical Investigation
London Avenue Canal
Levee and Floodwall Improvements
Orleans Levee Board Project No. 2049-0269
New Orleans, Louisiana

For: The Board of Levee Commissioners of the Orleans Levee District
New Orleans, Louisiana

Burk & Associates, Inc., Engineers, Planners & Environmental Scientists
New Orleans, Louisiana

LOCATION OF BORINGS
(Cont'd)

(Sheet 2 of 3)

<u>Boring Number</u>	<u>Station Number</u>	<u>Location</u>
B-34	154+00	Levee Toe
B-35	159+00	Levee Toe
B-36	1+95	Levee Crown
B-37	7+10	Levee Crown
B-38	11+60	Levee Crown
B-39	13+70	Levee Crown
B-40	21+40	Levee Crown
B-41	24+60	Levee Crown
B-42	29+60	Levee Crown
B-43	34+60	Levee Crown
B-44	39+60	Levee Crown
B-45	44+60	Levee Crown
B-46	50+65	Levee Crown
B-47	55+00	Levee Crown
B-48	60+00	Levee Crown
B-49	65+00	Levee Crown
B-50	69+85	Levee Crown
B-51	74+75	Levee Crown
B-52	79+75	Levee Crown
B-53	84+75	Levee Crown
B-54	89+75	Levee Crown
B-55	94+75	Levee Crown
B-56	99+75	Levee Crown
B-57	102+95	Levee Crown
B-58	104+75	Levee Crown
B-59	109+75	Levee Crown
B-60	114+75	Levee Crown
B-61	119+75	Levee Crown
B-62	124+75	Levee Crown
B-63	128+60	Levee Crown
B-64	134+00	Levee Toe
B-65	139+00	Levee Toe
B-66	143+00	Levee Toe
B-67	149+00	Levee Toe
B-68	154+00	Levee Toe

Geotechnical Investigation
London Avenue Canal
Levee and Floodwall Improvements
Orleans Levee Board Project No. 2049-0269
New Orleans, Louisiana

For: The Board of Levee Commissioners of the Orleans Levee District
New Orleans, Louisiana

Burk & Associates, Inc., Engineers, Planners & Environmental Scientists
New Orleans, Louisiana

LOCATION OF BORINGS
(Cont'd)

(Sheet 3 of 3)

<u>Boring Number</u>	<u>Station Number</u>	<u>Location</u>
B-69	159+00	Levee Toe
B-70	Not Taken	Canal Centerline
B-71	Not Taken	Canal Centerline
B-72	Not Taken	Canal Centerline
B-73	19+60	Canal Centerline
B-74	24+60	Canal Centerline
B-75	29+60	Canal Centerline
B-76	34+60	Canal Centerline
B-77	39+60	Canal Centerline
B-78	44+60	Canal Centerline
B-79	50+35	Canal Centerline
B-80	55+00	Canal Centerline
B-81	60+00	Canal Centerline
B-82	65+00	Canal Centerline
B-83	69+85	Canal Centerline
B-84	74+75	Canal Centerline
B-85	79+75	Canal Centerline
B-86	86+35	Canal Centerline
B-87	89+75	Canal Centerline
B-88	94+75	Canal Centerline
B-89	99+75	Canal Centerline
B-90	104+75	Canal Centerline
B-91	109+75	Canal Centerline
B-92	114+75	Canal Centerline
B-93	121+35	Canal Centerline
B-94	124+75	Canal Centerline
B-95	128+60	Canal Centerline
B-96	134+00 (East)	Canal Centerline
B-97	139+00 (East)	Canal Centerline
B-98	145+00 (East)	Canal Centerline
B-99	147+00 (East)	Canal Centerline
B-100	153+00 (East)	Canal Centerline
B-101	159+00 (East)	Canal Centerline

NOTE: Locations of canal borings is approximate.

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: London Avenue Canal, Levee and Floodwall Improvements

Orleans Levee Board Project No. 2049-0269, New Orleans, Louisiana

For: The Board of Levee Commissioners of the Orleans Levee District, New Orleans, La.

Burk & Associates, Inc., New Orleans, Louisiana

Boring No. 24 Soil Technician George Hardee Date 18 October 1985

Ground Elev. _____ Datum _____ Gr. Water Depth See Text

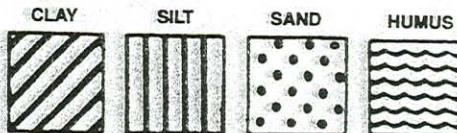
Sample No.	SAMPLE Depth — Feet		DEPTH STRATUM Feet		VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
	From	To	From	To			
1	2.0	2.5	0.0		Stiff gray & tan silty clay w/organic matter & sand pockets & layers		
2	5.0	6.0		6.0	Soft gray & tan silty clay w/sandy silt layers, pockets, organic matter & roots		
3	8.5	9.0	6.0	9.0	Soft gray clay w/organic matter, roots & wood		
4	10.5	11.5	9.0	12.5	Medium stiff brown organic clay w/roots & wood		
5	13.5	14.5	12.5	16.5	Soft gray silty clay w/roots & organic matter		
6	18.5	19.5	16.5		Very loose gray fine sand w/clay pockets		
7	20.0	21.5		23.0	Ditto	1	3
8	22.5	24.0	23.0	24.5	Loose gray fine sand	1	10
9	25.0	26.5	24.5		Medium dense gray fine sand	2	12
10	28.5	30.0			Ditto	4	19
11	33.5	35.0			Ditto	6	29
12	38.5	40.0			Ditto	8	21
13	43.5	45.0		48.0	Ditto	6	28
14	48.5	50.0	48.0	50.0	Loose gray clayey sand w/sandy clay & clay layers	3	5

*Number in first column indicates penetration in blow counts per foot.

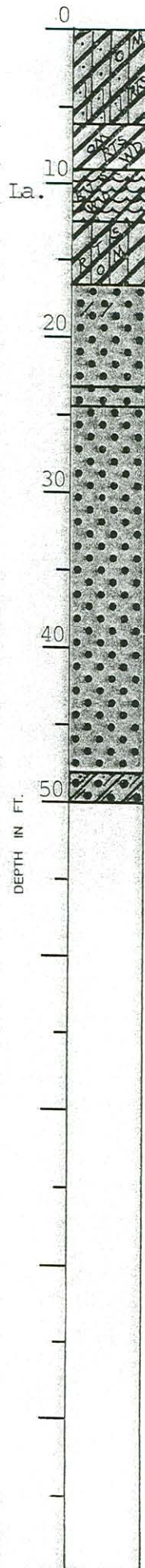
*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

WHILE THIS LOG OF BORING IS CONSIDERED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT ITS RESPECTIVE LOCATION ON THE DATE SHOWN, IT IS NOT WARRANTED THAT IT IS REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

Remarks: _____



Predominant type shown heavy. Modifying type shown light.



LOG OF BORING
EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: London Avenue Canal, Levee and Floodwall Improvements

Orleans Levee Board Project No. 2049-0269, New Orleans, Louisiana

For: The Board of Levee Commissioners of the Orleans Levee District, New Orleans, La.

Burk & Associates, Inc., New Orleans, Louisiana

Boring No. 25 Soil Technician George Hardee Date 18 October 1985

Ground Elev. _____ Datum _____ Gr. Water Depth _____ See Text _____

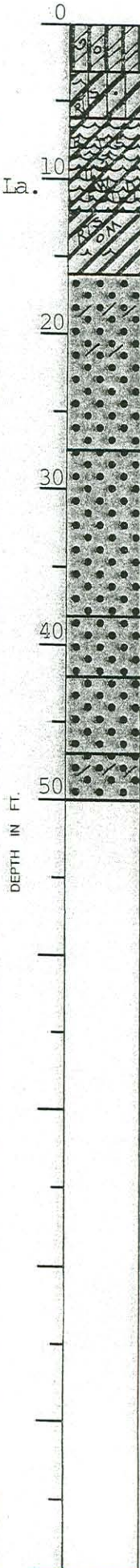
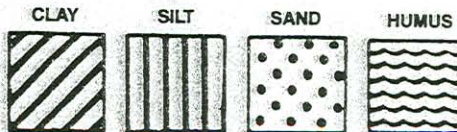
Sample No.	SAMPLE Depth — Feet		DEPTH STRATUM Feet		VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
	From	To	From	To			
1	1.5	2.5	0.0	3.0	Loose tan & gray clayey silt w/shells, gravel & clay pockets		
2	5.0	5.5	3.0	6.0	Stiff brown & gray silty clay w/humus, roots & trace of sand		
3	7.5	8.5	6.0		Soft dark brown & gray organic clay w/roots, humus pockets & shells		
4	11.0	11.5		12.0	Soft dark gray organic clay w/roots, silt pockets, wood & humus pockets (fill)		
5	13.5	14.5	12.0	16.0	Soft gray clay w/roots, organic matter & humus pockets		
6	19.0	19.5	16.0		Loose gray fine sand w/clay layers		
7	23.5	24.5			Loose gray fine sand w/clay pockets		
8	25.0	26.5		27.5	Ditto	3	5
9	27.5	29.0	27.5		Medium dense gray fine sand	3	15
10	30.5	32.0			Ditto	8	21
11	33.5	35.0		38.0	Ditto	5	22
12	38.5	40.0	38.0	42.0	Dense gray fine sand	15	37
13	43.5	45.0	42.0	47.0	Medium dense gray fine sand	7	10
14	48.5	50.0	47.0	50.0	Loose gray fine sand w/clay layers	3	5

*Number in first column = "N"

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

WHILE THIS LOG OF BORING IS CONSIDERED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT ITS RESPECTIVE LOCATION ON THE DATE SHOWN, IT IS NOT WARRANTED THAT IT IS REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

Remarks: _____



LOG OF BORING

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: London Avenue Canal, Levee and Floodwall Improvements

Orleans Levee Board Project No. 2049-0269, New Orleans, Louisiana

For: The Board of Levee Commissioners of the Orleans Levee District, New Orleans, La.

Burk & Associates, Inc., New Orleans, Louisiana

Boring No. 26 Soil Technician George Hardee Date 21 October 1985

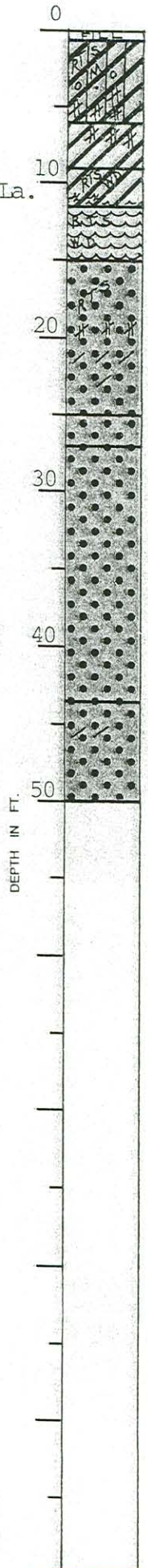
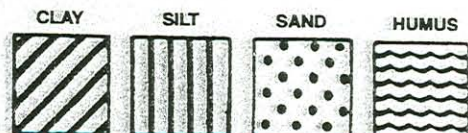
Ground Elev. _____ Datum _____ Gr. Water Depth See Text

Sample No.	SAMPLE Depth — Feet		DEPTH STRATUM Feet		VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
	From	To	From	To			
			0.0	0.5	Compact miscellaneous fill (shells, gravel & clay pockets)		
1	2.0	2.5	0.5		Medium stiff brown & gray silty clay w/organic matter & trace of sand		
2	5.0	5.5		6.0	Medium stiff tan & gray silty clay w/clayey silt layers, lenses, gravel & roots (fill)		
3	7.5	8.5	6.0	9.0	Medium stiff dark gray clay w/clayey silt layers		
4	10.5	11.5	9.0	11.5	Soft dark gray clay w/roots, wood, organic clay pockets & humus layers		
5	14.0	14.5	11.5	15.0	Loose dark brown humus w/roots & wood		
6	18.5	19.5	15.0		Very loose gray fine sand w/roots, clayey silt & clay layers		
7	24.5	25.0		25.0	Very loose gray fine sand w/trace of clay		
8	25.0	26.5	25.0	27.0	Loose gray fine sand	2	9
9	27.5	29.0	27.0		Medium dense gray fine sand	4	21
10	30.0	31.5			Ditto	8	26
11	33.5	35.0			Ditto	6	13
12	38.5	40.0		43.5	Ditto	10	24
13	43.5	45.0	43.5		Loose gray fine sand	1	6
14	48.5	49.5		50.0	Loose gray fine sand w/clay pockets		

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

WHILE THIS LOG OF BORING IS CONSIDERED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT ITS RESPECTIVE LOCATION ON THE DATE SHOWN, IT IS NOT WARRANTED THAT IT IS REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

Remarks: _____



LOG OF BORING

EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Sheet 1 of 2

Name of Project: London Avenue Canal, Levee and Floodwall Improvements
Orleans Levee Board Project No. 2049-0269, New Orleans, Louisiana
For: The Board of Levee Commissioners of the Orleans Levee District, New Orleans, La.
Burk & Associates, Inc., New Orleans, Louisiana

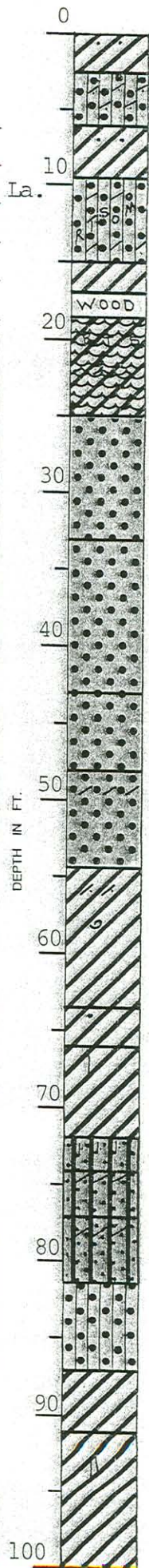
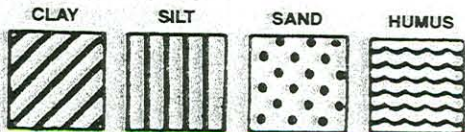
Boring No. 27 **Soil Technician** George Hardee **Date** 21 October 1985

Ground Elev. _____ **Datum** _____ **Gr. Water Depth** See Text

Sample No.	SAMPLE Depth - Feet		DEPTH STRATUM Feet		VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
	From	To	From	To			
1	2.0	2.5	0.0	2.5	Medium stiff tan & gray clay w/sand pockets		
2	5.0	5.5	2.5	6.0	Medium dense tan & gray silty sand w/clayey sand layers & pockets		
3	8.0	8.5	6.0	9.5	Stiff gray & brown clay w/sand pockets		
4	11.0	11.5	9.5		Loose gray silty sand w/clay pockets, organic matter & roots		
5	13.5	14.5		15.0	Loose gray silty sand w/roots, clay pockets & layers		
6	16.0	17.0	15.0	17.0	Medium stiff gray clay		
			17.0	18.5	Wood		
7	19.5	20.5	18.5		Soft dark gray organic clay w/roots & humus layers		
8	23.5	24.5		25.0	Very soft dark gray organic clay w/humus layers		
9	30.0	31.0	25.0	33.0	Loose gray fine sand	3	7
10	32.5	34.0	33.0		Medium dense gray fine sand	3	19
11	35.0	36.5			Ditto	4	22
12	37.5	39.0			Ditto	6	21
13	40.0	41.5		43.0	Ditto	5	23
14	43.5	45.0	43.0	48.0	Dense gray fine sand	11	43
15	48.5	50.0	48.0		Loose gray fine sand	3	5
16	53.5	54.5		54.5	Loose gray fine sand w/clay layers		
17	58.5	59.5	54.5	63.5	Medium stiff gray clay w/clayey sand pockets & shell fragments		
					(Continued)		

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. split spoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. split spoon sampler 1 ft. after seating 6 in.
WHILE THIS LOG OF BORING IS CONSIDERED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT ITS RESPECTIVE LOCATION ON THE DATE SHOWN, IT IS NOT WARRANTED THAT IT IS REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

Remarks: _____



Sheet 2 of 2

For: The Board of Levee Commissioners of the Orleans Levee District, New Orleans, La.
Burk & Associates, Inc., New Orleans, Louisiana

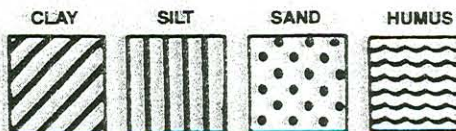
Boring No. 27 Soil Technician George Hardee Date 21 October 1985
(Cont'd)
Ground Elev. _____ Datum _____ Gr. Water Depth See Text

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*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. split spoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. split spoon sampler 1 ft. after seating 6 in.

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Remarks: _____



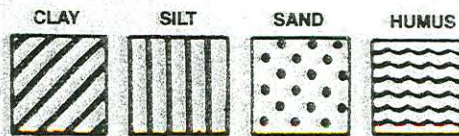
METAIRIE, LA.

Ground Elev. _____ Datum _____ Gr. Water Depth See Text

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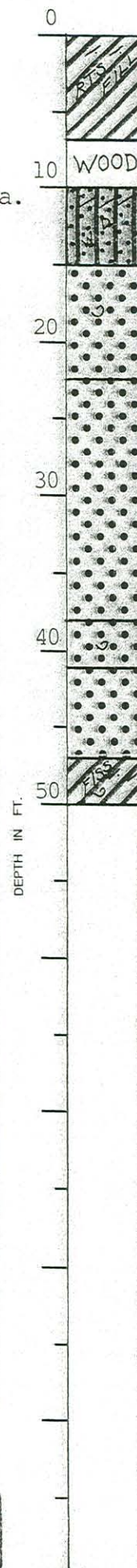
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Remarks: _____



METAIRIE, LA.

Dominant tone shown heavy Modifying tone shown light



EUSTIS ENGINEERING COMPANY
SOIL AND FOUNDATION CONSULTANTS
METAIRIE, LA.

Name of Project: London Avenue Canal, Levee and Floodwall Improvements

Orleans Levee Board Project No. 2049-0269, New Orleans, Louisiana

For: The Board of Levee Commissioners of the Orleans Levee District, New Orleans, La.

Burk & Associates, Inc., New Orleans, Louisiana

Boring No. 60 Soil Technician A. J. Mayeux Date 7 December 1985

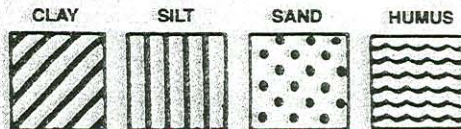
Ground Elev. _____ Datum _____ Gr. Water Depth _____ See Text

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*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

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Dominant time shown heavy; Modifying time shown light

LOG OF BORING
EUSTIS ENGINEERING COMPANY
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 METAIRIE, LA.

Sheet 1 of 2

Name of Project: London Avenue Canal, Levee and Floodwall Improvements

Orleans Levee Board Project No. 2049-0269, New Orleans, Louisiana

For: The Board of Levee Commissioners of the Orleans Levee District, New Orleans, La.

Burk & Associates, Inc., New Orleans, Louisiana

Boring No. 61 Soil Technician A. J. Mayeux Date 10 December 1985

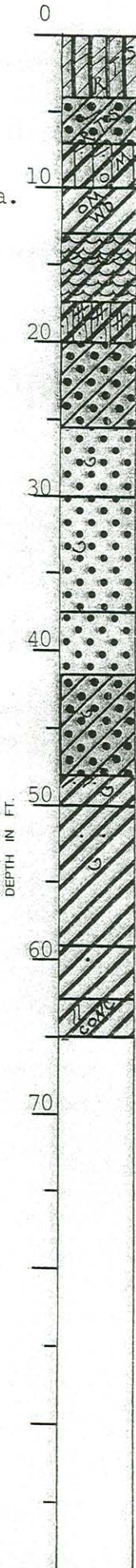
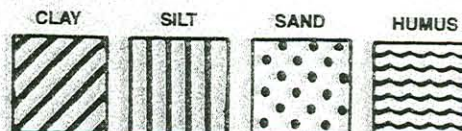
Ground Elev. _____ Datum _____ Gr. Water Depth See Text

Sample No.	SAMPLE Depth—Feet		DEPTH STRATUM Feet		VISUAL CLASSIFICATION	*STANDARD PENETRATION TEST	
	From	To	From	To			
1	2.0	2.5	0.0	4.0	Very compact tan & gray clayey silt w/clay pockets & roots		
2	5.0	5.5	4.0	7.0	Dense tan & gray clayey sand w/clay lenses & roots		
3	8.0	8.5	7.0	10.0	Soft gray silty clay w/clayey sand pockets & trace of organic matter		
4	11.0	11.5	10.0	13.0	Medium stiff dark gray clay w/organic matter & wood		
5	14.0	14.5	13.0	17.5	Stiff brown organic clay w/humus layers		
6	19.0	19.5	17.5	20.0	Soft gray silty clay w/alternating clayey silt & sandy silt layers		
7	20.0	21.5	20.0		Very loose gray clayey sand	1	4
8	22.5	24.0		25.5	Ditto	0	2
9	25.0	26.5	25.5		Loose gray sand w/shell fragments	1	7
10	28.5	30.0		30.0	Ditto	2	10
11	33.5	35.0	30.0	37.5	Medium dense gray sand w/shell fragments	4	15
12	38.5	40.0	37.5	41.5	Dense gray sand	6	34
13	43.5	45.0	41.5	48.0	Loose gray clayey sand w/shell fragments	1	4
14	49.0	49.5	48.0	50.0	Soft gray clay w/clayey sand pockets & shell fragments		
15	54.0	54.5	50.0	59.0	Medium stiff gray clay w/sand pockets & & shell fragments		
16	59.0	59.5	59.0	62.5	Stiff greenish-gray & tan clay w/trace of sand		

*Number in first column indicates number of blows of 140-lb. hammer dropped 30 in. required to seat 2-in. O. D. splitspoon sampler 6 in. Number in second column indicates number of blows of 140-lb. hammer dropped 30 in. required to drive 2-in. O. D. splitspoon sampler 1 ft. after seating 6 in.

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Remarks: _____



Dominant type shown heavy. Modifying type shown light.

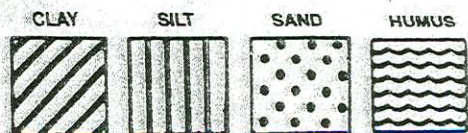
Sheet 2 of 2

Ground Elev. _____ Datum _____ Gr. Water Depth _____ See Text

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WHILE THIS LOG OF BORING IS CONSIDERED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT ITS RESPECTIVE LOCATION ON THE DATE SHOWN, IT IS NOT WARRANTED THAT IT IS REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

Remarks: _____



Geotechnical Investigation
London Avenue Canal
Levee and Floodwall Improvements
Orleans Levee Board Project No. 2049-0269
New Orleans, Louisiana

For: The Board of Levee Commissioners of the Orleans Levee District
New Orleans, Louisiana

Burk & Associates, Inc., Engineers, Planners & Environmental Scientists
New Orleans, Louisiana

SUMMARY OF LABORATORY TEST RESULTS

BORING 23

Sam- ple No.	Depth In Feet	Classification	Water Content Percent	Density PCF		Unconfined Compressive Strength PSF
				Dry	Wet	
1	1.5	Stiff brownish-gray clay w/clayey sand & clayey silt pockets & roots	30.3	88.0	114.6	2995
2	5.0	Very soft dark brown & gray clay w/silty sand pockets & roots	82.1	48.3	88.0	485
3	7.5	Soft dark gray clay w/sand pockets, organic matter & decayed wood	60.4	59.0	94.6	995
4	10.5	Soft dark brown & gray clay w/organic matter & decayed wood	106.6	38.6	79.8	785
5	13.5	Soft gray silty clay w/roots & sand pockets	35.6	84.4	114.4	855

BORING 24

1	2.0	Stiff gray & tan silty clay w/sand layers, pockets & roots	18.1	104.1	122.9	2910
2	5.0	Soft gray & tan clay w/sandy silt layers, pockets, roots & organic matter	44.0	70.4	101.3	970
4	10.5	Medium stiff brown organic clay w/wood & roots	154.3	32.0	81.3	1450
5	13.5	Soft gray silty clay w/roots	35.0	83.5	112.8	845

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New Orleans, Louisiana

SUMMARY OF LABORATORY TEST RESULTS

BORING 25

Sample No.	Depth In Feet	Classification	Water Content Percent	Density PCF		Unconfined Compressive Strength PSF
				Dry	Wet	
1	1.5	Loose tan & gray clayey silt w/roots	21.0	94.2	114.0	785*
2	5.0	Medium stiff brown & gray silty clay w/humus, roots & trace of sand	66.8	46.9	78.2	1170*
3	7.5	Soft dark brown & gray organic clay w/roots	271.1	18.9	70.1	575
4	11.0	Soft dark gray organic clay w/silt pockets, wood & roots	95.1	----	-----	----
5	13.5	Soft gray clay w/organic matter & roots	66.5	59.2	98.5	595

BORING 26

1	2.0	Medium stiff brown & gray silty clay w/trace of sand & roots	30.8	79.0	103.4	1030*
2	5.0	Medium stiff gray & tan silty clay w/clayey silt layers, lenses, gravel & roots	30.4	86.5	112.8	1065*
3	7.5	Medium stiff dark gray clay w/clayey silt layers & roots	75.8	51.6	90.7	1320
4	10.5	Soft dark gray clay w/roots, organic clay layers & wood	66.3	54.3	90.3	730
5	14.0	Loose dark brown humus w/roots & wood	317.7	----	-----	----

*Unconsolidated Undrained Triaxial Compression Test - One Specimen;
Confined at the approximate overburden pressure.

Geotechnical Investigation
London Avenue Canal
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New Orleans, Louisiana

SUMMARY OF LABORATORY TEST RESULTS

BORING 27

(Sheet 1 of 2)

Sample No.	Depth In Feet	Classification	Water Content Percent	Density PCF		Unconfined Compressive Strength PSF	Atterberg Limits		
				Dry	Wet		LL	PL	PI
1	2.0	Medium stiff tan & gray clay w/sand pockets & roots	36.9	82.1	112.4	1960			
2	5.0	Medium dense tan & gray silty sand w/clayey sand layers & pockets	18.5	----	-----	----			
3	8.0	Stiff gray & brown clay w/sand pockets	28.6	87.0	111.9	3330			
4	11.0	Loose gray silty sand w/clay pockets, organic matter & roots	35.0	80.6	108.8	500*			
6	16.0	Medium stiff gray clay	70.0	57.8	98.2	1035			
7	19.5	Soft dark gray organic clay w/humus layers & roots	193.4	24.5	71.8	940	243	69	174
8	23.5	Very soft dark gray organic clay w/humus layers	149.2	31.3	78.0	460			
17	58.5	Medium stiff gray clay w/clayey sand pockets & shell fragments	47.7	72.1	106.5	1825	68	20	48

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Geotechnical Investigation
 London Avenue Canal
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For: The Board of Levee Commissioners of the Orleans Levee District
 New Orleans, Louisiana

Burk & Associates, Inc., Engineers, Planners & Environmental Scientists
 New Orleans, Louisiana

SUMMARY OF LABORATORY TEST RESULTS

BORING 27
 (Cont'd)

(Sheet 2 of 2)

Sam- ple No.	Depth In Feet	Classification	Water Content Percent	Density PCF		Unconfined Compressive Strength PSF	Atterberg Limits		
				Dry	Wet		LL	PL	PI
18	63.5	Stiff greenish- gray clay w/trace of sand	31.5	89.1	117.2	2625			
19	68.5	Stiff greenish- gray & tan clay w/trace of silt	32.1	89.3	118.0	3310			
25	93.5	Stiff gray clay w/silt pockets	47.9	71.3	105.3	2250	73	21	52
26	98.5	Ditto	37.1	83.6	114.6	2205			

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Burk & Associates, Inc., Engineers, Planners & Environmental Scientists
New Orleans, Louisiana

SUMMARY OF LABORATORY TEST RESULTS

BORING 58

Sam- ple No.	Depth in Feet	Classification	Water Content Percent	Density PCF		Unconfined Compressive Strength PSF
				Dry	Wet	
1	2.0	Stiff gray & brown clay w/clayey sand pockets	33.8	86.6	115.9	3455
2	5.0	Medium stiff gray clay w/clayey sand pockets	34.5	83.6	112.4	1410
4	11.0	Soft dark gray clay w/many roots	62.5	60.6	98.4	920
5	14.0	Very soft gray clay w/clayey sand pockets, roots & wood	37.7	----	-----	----
6	19.0	Dense gray silty sand w/clay pockets	23.1	103.2	127.0	2220*

BORING 59

1	2.0	Soft brown & gray clay w/clayey sand pockets, roots & some fill	34.9	84.4	113.8	865
2	5.0	Medium stiff dark gray & brown clay w/clayey sand pockets & roots	39.9	76.5	107.0	1365
3	11.0	Medium compact gray sandy silt w/clay layers & wood	32.5	----	-----	----
13	49.0	Medium stiff gray fissured clay w/clayey sand pockets & shell fragments	65.4	60.5	100.0	1815

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New Orleans, Louisiana

SUMMARY OF LABORATORY TEST RESULTS

BORING 60

Sam- ple No.	Depth in Feet	Classification	Water Content Percent	Density PCF		Unconfined Compressive Strength PSF
				Dry	Wet	
1	2.0	Stiff brown & gray clay w/clayey sand pockets & roots	34.0	86.1	115.4	2160
2	5.0	Soft gray & tan clay w/organic clay layers & roots	62.9	59.6	97.1	910
3	8.0	Extremely soft brown humus w/organic clay layers & roots	296.4	18.0	71.5	195
4	11.0	Soft brown organic clay w/humus layers, wood & roots	122.8	----	-----	----

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New Orleans, Louisiana

SUMMARY OF LABORATORY TEST RESULTS

BORING 61

Sam- ple No.	Depth in Feet	Classification	Water Content Percent	Density PCF		Unconfined Compressive Strength PSF
				Dry	Wet	
1	2.0	Very compact tan & gray clayey silt w/clay pockets & roots	17.5	104.9	123.2	3190*
2	5.0	Dense tan & gray clayey sand w/clay lenses & roots	17.0	101.5	118.7	2025*
3	8.0	Soft gray silty clay w/clayey sand pockets & trace of organic matter	39.6	79.3	110.7	675
4	11.0	Medium stiff dark gray clay w/organic matter & wood	78.5	52.4	93.5	1175
5	14.0	Stiff brown organic clay w/humus layers	240.1	20.0	68.2	3720
6	19.0	Soft gray silty clay w/alternating clayey silt & sandy silt layers	26.7	98.5	124.8	555
14	49.0	Soft gray clay w/clayey sand pockets & shell fragments	46.2	74.0	108.2	850
15	54.0	Medium stiff gray clay w/sand pockets & few shell fragments	46.3	73.9	108.1	1650
16	59.0	Stiff greenish-gray & tan clay w/trace of sand	27.0	96.5	122.6	3100
17	64.0	Very stiff tan & gray clay w/silt pockets & concretions	30.5	92.3	120.5	4225

*Unconsolidated Undrained Triaxial Compression Test - One Specimen;
Confined at the approximate overburden pressure.

NOTE:

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SECTION 02225 – LIGHTWEIGHT AGGREGATE FILL AND BACKFILL

PART 1 GENERAL

1.1 SCOPE

The work covered by this section consists of furnishing all plant, labor, equipment, and materials, and performing all structure related backfill and fill, and other incidental earthwork as may be necessary to complete the fills, and backfills, as shown on the drawings, and as hereinafter specified.

1.2 QUALITY CONTROL

The Contractor shall establish and maintain quality control for all fill and backfill operations to assure compliance with contract requirements, and maintain records of quality control for all construction operations including but not limited to the following:

(1) Equipment. Type, size, and suitability for construction of the prescribed work.

(2) Foundation Preparation. Breaking surface in advance of fill construction, and during fill placement when necessary, drainage of foundation and partially completed fill.

(3) Construction. Layout, maintaining existing drainage, thickness of layers, spreading and compacting.

(4) Materials. Suitability of materials for use in backfill, including all structure and structure related backfill and fills.

(a) Sources of material; including location, name, point of contact and other pertinent information for each proposed source of material.

(b) Certificates of compliance.

(c) Inspection of materials before they are incorporated into the work to insure compliance with contract requirements.

(d) Cleanliness of lightweight aggregate.

(e) Gradation of lightweight aggregate.

(f) Quantity of lightweight aggregate delivered and placed each day.

(5) Grade and Cross Section. Side slopes, and grades.

(6) Grade Tolerances. Check fills to determine if placement conforms to prescribed grade and cross section.

(7) Control Testing.

(a) Contractor Testing. The Contractor shall perform all control testing such as soil classification, moisture content, gradation curves, control compaction curves, and in-place density. The Contractor shall perform as a minimum, the specified number of each of the tests to demonstrate compliance with contract requirements to the satisfaction of the Contracting Officer. Testing shall be performed by a Government-approved testing agency or organization. Criteria used for obtaining Government approval shall be in accordance with ASTM D 3740. Tests performed shall be pursued in such a manner that the results are obtained and furnished to the Government within 24 hours. Certificates and laboratory test reports for lightweight aggregate fill shall be representative of the particular lot of material to be furnished and shall be furnished to the Contracting Officer for approval. Test reports for lightweight aggregate fill shall include results for the properties required in paragraph 2.2. No additional payment will be made for control testing required in this paragraph. All cost in connection therewith shall be included in the applicable contract unit price for "Lightweight Aggregate Fill". The following tests are required to provide adequate control:

(1) Gradation and Loose Voids Tests. At least two tests for gradation and loose void content shall be made on two randomly selected truck/barge loads of lightweight aggregate during each 8-hour period/shift of lightweight aggregate placement or at least two tests for gradation and loose void content from one randomly selected truck/barge load when lightweight aggregate is placed during any shift lasting less than 4 hours. The lightweight aggregate shall be tested by an approved lab for compliance with gradation and loose void content requirements. Sampling shall be done in the presence of the Contracting Officer's Representative and in accordance with the procedures described in ASTM D 75. The test results shall be furnished to the Contracting Officer for information prior to placement of any lightweight aggregate. Materials not meeting the requirements of this specification shall be removed from the job site and replaced with lightweight aggregate meeting the specifications at no additional cost to the Government.

(2) Control Compaction Curves. Control compaction curves on Lightweight Aggregate fill shall be established in accordance with ASTM D 698 (Standard Proctor Density Test). Two control compaction curves shall be made for lightweight aggregate material from each source.

(3) In-Place Density Tests. In-place density tests for lightweight aggregate fill material shall be made in accordance with ASTM D 1556, or ASTM D 2167, and shall be made at a frequency to assure compliance with the contract requirements, but not less than on density test per lift placed. The location of the test shall be representative of the area being tested and/or as directed by the Contracting Officer.

(4) In addition to the above frequency of tests, additional tests are required as follows:

(a) Where the Contracting Officer's representative has reason to doubt the adequacy of the compaction.

(b) Where special compaction procedures are being used.

(c) When fill materials change substantially, the Contracting Officer may direct additional testing.

(d) Areas not meeting the specified density shall be retested at no additional cost to the Government, after corrective measures have been applied.

(b) Government Testing. As a control, the Government will perform assurance and check tests for maximum density for all materials in accordance with ASTM D 698, ASTM D 4253, and ASTM D 4254. If values for maximum dry density as determined by the Contractor and as determined by the Government do not agree, the Government will determine the values to be used. The Government will also perform check and assurance testing of the other control testing required by the Contractor in subparagraph 1.2(7)(a).

(1) A sample of lightweight aggregate weighing at least 25 pounds shall be submitted for verification testing. Additionally, the Government may sample and test lightweight aggregate to determine compliance with the specifications. The Contractor shall provide facilities and labor as may be necessary to assist the Government in procurement of representative test samples. Samples of lightweight aggregate will be obtained at the job site in accordance with ASTM D 75.

(8) Laboratory Information. The laboratory conducting these tests shall comply with the requirements of ASTM E 329. The Contractor shall also furnish the name, location, and point of contact for the proposed testing laboratory/laboratories. Additionally, the Contractor shall furnish, for approval, evidence of accreditation for the proposed testing laboratory, as issued by a State or National organization,

which rates the laboratory as qualified to perform the sampling and testing specified herein for lightweight aggregate.

1.2.1 Acceptance of Material

No lightweight aggregate shall be used until notice of acceptance has been given by the Contracting Officer. Lightweight aggregate material will be accepted on the basis of a certificate of compliance, accompanied by laboratory test reports, stating that the material meets the requirements of this specification.

1.2.2 Reporting

The original and two copies of these records of inspections, reports, certificates and tests, as well as the records of corrective action taken, shall be furnished the Government daily. Format of the report shall be prescribed in Section 01451, "CONTRACTOR QUALITY CONTROL".

1.3 REFERENCES

The following publications of the issues listed below, but referred to before and thereafter by the basic designation only, form a part of this specification to the extent indicated by the references thereto:

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) STANDARD

C 29-90 (CRD-C 106)	Unit Weight and Voids in Aggregate
C 131-89 (CRD-C 117)	Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
C 136-93 (CRD-C 103)	Sieve Analysis of Fine and Coarse Aggregate
C 535-89 (CRD-C 145)	Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
D 75-87(92)(CRD-C 155)	Sampling Aggregates
D 698-91	Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lb/cu.ft)(600 kN-m/cu meters)
D 1556-09	Density of Soil in Place by the Sand-Cone Method

D 2167-94	Density and Unit Weight of Soil in Place by the Rubber Balloon Method
D 2216	(1998) Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
D 2487	(2000) Classification of Soils for Engineering Purposes (Unified Soil Classification System)
D 2922-91	Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shall Depth)
D 3080-90	Direct Shear Test of Soils Under Consolidated Drained Conditions
D 3740-92	Evaluation of Agencies Engaged in the Testing and/or Inspection of Soil and Rock as used in Engineering Design and Construction
D 4253-91	Maximum Index Density and Unit Weight of Soils Using a Vibratory Table
D 4254-91	Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density
D 4318-95	Liquid Limit, Plastic Limit, and Plasticity Index of Soils
E 329 (2005)	Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction

1.4 EQUIPMENT

1.4.1 Compaction Equipment

When the conditions of the spread layers are satisfactory, each layer shall be compacted by any of the following methods, at the option of the Contractor:

- (1) Tamper-Type Roller. Four complete passes over each layer will be required. Each pass of the tamping roller shall overlap the preceding or adjacent pass by not less than 1 foot.
- (2) Rubber-Tired Roller. Two complete passes over each layer will be required.
- (3) Crawler-Type Tractor. Three complete passes over each layer will be required. The layer thickness to be compacted by this equipment shall not exceed 6

inches. The tractor will not be considered to be compacting while spreading materials.

1.4.2 Miscellaneous Equipment

Scarifiers, discs, spring-tooth or spike-tooth harrows, spreaders, hand compactors, vibrators, and other equipment shall be types suitable for the type of construction required and acceptable to the Contracting Officer. All hand-operated vibratory compactors shall be field checked prior to their use on fill to assure that the required results can be obtained. Such field checks shall be accomplished under the direction and supervision of the Contracting Officer. Any hand operated equipment found not producing the required results shall be removed from the project.

1.4.3 Sprinkling Equipment

Sprinkling equipment shall be designed to apply water uniformly and in controlled quantities to variable widths of surface.

PART 2 PRODUCTS

2.1 FILL AND BACKFILL MATERIALS

2.1.1 General

The backfill shall be constructed of suitable materials as defined in paragraph 2.2. Lightweight aggregate fill materials are not available on-site and shall be obtained by the Contractor from off-site commercial sources. The fill shall be constructed of aggregate that is free from unsuitable and frozen materials as defined in paragraphs 2.1.1.1 and 2.1.1.2.

2.1.1.1 Unsuitable Materials

Organic matter, sticks, branches, roots, brick, concrete, rock, existing surfacing and other debris shall be unsuitable for placement in backfill and shall be disposed of as specified in 02231-3.4. Pockets and/or zones of wood shall not be placed in the FILL SECTION.

2.1.1.2 Frozen Materials

Under no circumstances shall frozen earth, snow, or ice be placed in fill or backfill. The Contracting Officer may require the wasting of frozen material in order that construction may proceed, and such material wasted, if directed by written order of the Contracting Officer, will be paid for under the applicable backfill section.

2.2 LIGHTWEIGHT AGGREGATE

Lightweight aggregate shall consist of expanded clay, expanded slate, iron blast-furnace slag or scoria. The material shall not dissolve in water. Lightweight aggregate shall also meet the following requirements when tested by the methods indicated:

LIGHTWEIGHT AGGREGATE REQUIREMENTS

<u>Property</u>	<u>ASTM Test Method</u>	<u>Requirement</u>
Angle of Internal Friction	D 3080 *	40 degrees, min.
Gradation	C 136	Well graded **
Passing 2-inch sieve		100% by weight
Passing #4 sieve		15% by weight, max
Passing #200 sieve		5% by weight, max
LA Abrasion	C 131 or C 535	45%, max
Unit Weight (UW), Loose Dry	C 29	65 pcf, max
* Direct shear test performed on a saturated representative sample with particles larger than 3/4-inch removed and tested in a 12-inch by 12-inch or larger direct shear box at a rate of 0.01 inches per minute at normal loads of 250, 500 and 1000 pounds per square foot. Gradations according to ASTM C 136 should be run before and after direct shear testing with particles larger than 3/4-inch removed. Results of direct shear testing shall be furnished to the Contracting Officer at least 24 hours prior to hauling of material.		

** Well graded shall mean having a particle size distribution that produces a minimum void space. The gradation shall not vary by more than plus or minus 5 percentage points from the gradation submitted for the 3-1/2, 3, 2-1/2, 2, 1-1/2, 1, 3/4, 1/2 and 3/8-inch sieves starting with the sieve representing the maximum size submitted.

PART 3 EXECUTION

3.1 SUBGRADE PREPARATION

Preparation of surfaces to receive fill shall comply with Sections 02231 and 02318. Unsatisfactory material in surfaces to receive lightweight aggregate fill shall be removed and replaced with satisfactory materials. The surface to receive fill shall be scarified to a depth of 6 inches before the fill is started. If the density of the subgrade is less than the density required for the fill, the ground surface shall be broken and scarified to a depth of 12 inches, pulverized, moistened, if necessary, and compacted to a density of the fill it shall receive. Tests for determining the subgrade density shall be performed in accordance with subparagraph 1.2(7)(a)(3).

3.2 PLACEMENT AND COMPACTION OF LIGHTWEIGHT AGGREGATE FILL AND BACKFILL

3.2.1 Lightweight Aggregate

Lightweight aggregate fill shall be as defined in paragraph 4.2.

- (1) The location and extent of fill is shown on the drawings.
- (2) All lightweight aggregate shall be installed directly in place without slinging, tossing or throwing.
- (3) The materials shall be placed or spread in layers, the first layer and each succeeding layer not more than 24 inches in thickness, all prior to compaction.
- (4) Layers shall start at the sheeting and be carried substantially horizontal toward the protected side.
- (5) Lightweight aggregate fill shall not be placed in or under water, or on frozen ground.
- (6) The final grades/slope of the fill near the sheeting shall be placed to facilitate drainage. The Contractor will not be paid for lightweight aggregate that is placed above the prescribed grades. The lightweight aggregate placed above the prescribed grades shall be removed, at no cost to the Government, from the project.

3.2.2 Compaction

Each successive layer of lightweight aggregate fill material shall be compacted to at least 85% of standard proctor maximum density as determined by ASTM D 698, in subparagraph 1.2(7)(a)(2) prior to placement of the next successive layer.

3.2.3 Handling and Stockpiling

Lightweight aggregate shall be handled to avoid breakage or segregation of the material.

3.3 DRESSING

The entire section shall be brought to not less than the prescribed design-cross section, within allowable tolerance, at all points. The final dressing shall be done with a dozer.

3.4 SEQUENCE OF STRUCTURAL BACKFILLING

The backfill shall be brought up in substantially equal increments on the entire length of the sheeting.

3.5 GRADE TOLERANCES

All fills and backfills shall be constructed to the design-grade and cross section shown on the drawings.

3.6 MEASUREMENT

Unless otherwise specified, lightweight aggregate fill specified in this section will be measured for payment by the cubic yard, and quantities will be determined by the average end area method. The basis for the measurement of these fills will be cross sections of the areas to be filled taken prior to filling operations (after clearing and grubbing as required in Section 02231) and the theoretical design sections of the completed backfills constructed within the specified tolerance. Volumes occupied by drainage structures or other structure will not be included in measurement of embankment for payment.

3.7 PAYMENT

3.7.1 Fills and Backfill

Payment for all lightweight aggregate materials placed as required in fill and backfill, will be made at the applicable contract unit price per cubic yard for "Lightweight Aggregate Fill". Price and payment shall constitute full compensation for furnishing all plant, labor, equipment and material, and performing all operations necessary for foundation preparation, and hauling, stockpiling, storing, placing and compacting the fill material as specified herein.

3.7.2 Waste Materials

No measurement will be made for materials ordered wasted. Payment for materials ordered wasted will be made by an equitable adjustment under the provision entitled "CHANGES" of the Contract Clauses.

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SECTION 02318 - EXCAVATION

PART 1 GENERAL

1.1 SCOPE

The work covered by this section consists of furnishing all plant, labor, equipment, and materials, and performing all operations necessary for stockpiling materials, removal of material from embankment foundations, and all other excavation incidental to the construction of embankments as specified herein or as shown on the drawings.

1.2 MEASUREMENT

1.2.1 Excavation

Excavation required by this section will be measured for payment by the cubic yard, and quantities will be determined by the average end area method. The basis for the measurement of these fills will be cross sections of the areas to be excavated

1.3 PAYMENT

1.3.1 Excavation

Payment for all excavation as required will be made at the applicable contract unit price per cubic yard for "Excavation". Price and payment shall constitute full compensation for furnishing all plant, labor, equipment and material, and performing all operations necessary for excavation, hauling, stockpiling, and storing the excavated material as specified herein.

1.4 QUALITY CONTROL

The Contractor shall establish and maintain quality control for excavation operations to assure compliance with contract requirements, and maintain records of its quality control for all construction operations including, but not limited to, the following:

- (1) Disposition of Materials. Testing Program, Location of tested materials (station and lift), and Applicable Compaction Curves.
- (2) Ditches. Locations, grade and cross-section.
- (3) Traverses. Locations and dimensions.

The original and two (2) copies of these records of inspections and tests, as well as the records of corrective action taken, shall be furnished the Government daily. Format of

the report shall be as prescribed in Section 01451, "CONTRACTOR QUALITY CONTROL".

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 EXCAVATION IN OTHER AREAS

3.1.1 General

Excavation from other areas shall consist of removal of material in preparing the embankment foundations to the lines and grades shown on the drawings, . Care shall be exercised by the Contractor in excavating to the lines and grades shown and in removing waste materials so as not to excavate below the grades specified or depth indicated. Excavation below the lines and grades specified or the depth indicated shall be backfilled by the Contractor at its expense. Such backfill shall be brought to grade with material with each layer placed and compacted to a level similar to the surrounding backfill.

3.2 HAULING

All excavated material to be hauled to the site or to be removed from the site, including debris, shall be hauled in trucks with secured binders on tailgates to the place of destination. The route for trucks carrying material to and from the job site shall avoid residential streets, and shall be approved by the Contracting Officer. Trucks shall not spill or track mud on public roads. The Contractor shall take immediate action to clean up any material spilled on the roads without notification from the Contracting Officer. Failure by the Contractor to satisfactorily clean public roads used for the hauling operation shall result in the suspension of hauling operations until such roads are cleaned to the satisfaction of the Contracting Officer.

3.3 GRADE TOLERANCES

3.3.1 Excavation

All excavation shall be cut to the grades and cross sections shown on the drawings.

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SECTION 02411 - STEEL SHEET PILING

PART 1 GENERAL

1.1 SCOPE

The work covered by this section consists of furnishing all plant, equipment, labor and materials and performing all operations in connection with the installation of Contractor furnished steel sheet piling in accordance with these specifications and applicable drawings.

1.2 RELATED WORK SPECIFIED ELSEWHERE

Reserved

1.3 QUANTITIES

The estimated quantities of sheet piling listed in the unit price schedule of the contract as to be furnished by the Contractor are given for bidding purposes only. Sheet piling quantities for payment shall consist of the square feet of piling acceptably installed. This quantity shall consist of the lengths of piles driven below the elevations indicated for the top of piles times the length along the wall alignment as shown on the drawings plus any additions thereto resulting from changes in design or alignment as provided in paragraph 3.1.1.2.

1.4 MEASUREMENT AND PAYMENT

1.4.1 Measurement

1.4.1.1 Driven Steel Sheet Piling

Measurement of driven steel sheet piling, except for fabricated piles (special corners, transitions, tee sections, etc.) and rolled corners, will be by the square foot of piling acceptably installed. The length of each pile driven will be measured to the nearest tenth of a linear foot and converted to square feet for payment purposes. The square footage will be determined by multiplying the number of piles times the measured length acceptably driven below the cut-off elevation shown on the drawings times the theoretical driving width of the pile. The number of piles paid for shall not exceed the number of piles indicated on the drawings. When driven piles are directed to be cut off before reaching the penetration depth shown on the drawings, that portion cut off will be measured for payment on the basis of its total length, provided that the length is not greater than the difference between the total length of piles shown on the plans for that location and the length of piles driven below the cut-off elevation. No deduction will be

made for holes cut for drains and utilities in computing the area of steel sheet pile structures. The portion of any pile driven below the tip elevation shown on the drawings will not be measured for payment unless overdriving is directed by the Contracting Officer.

1.4.1.2 Pulled Piles

Piles ordered pulled will be measured for payment by the square foot. Square footage will be determined by multiplying the theoretical driving width of the pile by the length pulled above the cut-off elevation shown on the drawings. Redriving of such piles, when required, shall be measured for payment by the square foot, which shall be determined by multiplying the theoretical driving width of the pile by the length redriven below the cut-off elevation shown on the drawings.

1.4.1.3 Miscellaneous Items

No separate measurement will be made for the fabricated piles and rolled corners, sheet piling void backfill, or painting sheet piling.

1.5 PAYMENT

1.5.1 Sheet Piling

Payment for steel sheet piling, acceptably installed and measured in accordance with above paragraph 1.4.1.1, will be made at the applicable contract unit price per square foot for "Piling, Steel Sheet, Type PZ 35. Price and payment shall constitute full compensation for fabricating, adding cover plates, painting, furnishing, handling, driving, cutting holes, backfilling voids, and all other work incidental to acceptably installing the steel sheet piling.

1.5.2 Fabricated Piles and Rolled Corners

No separate payment will be made for the transition piles or the rolled corners and all costs associated with fabricating, furnishing, delivering, and installing them shall be included in the contract unit cost for "Piling, Steel Sheet, Type PZ 35".

1.5.3 Cut-Offs and Splices

Cut-offs and/or splices which are not required under the original terms of this contract but become necessary to construct the sheet pile structures as shown on the drawings and as specified herein, and which are necessitated due to Contractor negligence in any procedure required to install such structures shall be provided at no additional cost to the Government. Cut-offs and/or splices of this type which are required through no fault of the Contractor shall be paid for by lump sum payments of \$10.00 per cut-off and \$25.00 per splice. Additionally, the portion of a Contractor furnished pile which is cut off when

the Contractor is deemed to be not at fault, shall be paid for at 75 percent of the applicable contract unit price for the amount measured in accordance with above paragraph 1.4.1.

1.5.4 Pulled Piles

Piles, which are directed to be pulled and found to be in good condition, will be paid for at the contract price for furnishing and driving the pile in its original position. The cost of pulling will be paid for at 25 percent of the contract unit price and when such piles are redriven, the cost of redriving will be paid for at 25 percent of the contract unit price for that portion of the pile acceptably redriven below the cut-off elevation. When piles are pulled and found to be defective and/or damaged due to Contractor negligence, no payment will be made for originally furnishing and driving such piles, nor for the operation for pulling. Piles replacing defective or damaged piles will be paid for at the applicable contract unit price. Piles which are pulled and found to be damaged through no fault of the Contractor, will be paid for at the applicable contract unit price for originally installing the damaged pile plus 25% of the applicable contract unit price for the cost of pulling. Subsequently, when a new pile is furnished and driven, it shall be paid for at the applicable contract unit price.

1.6 REFERENCES

The following standards of the issues listed below and referred to thereafter by basic designation only from a part of this specification to the extent indicated by the references thereto:

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) STANDARDS

ASTM A 36	(2001) Carbon Structural Steel
ASTM A 572	(2001) High-Strength Low-Alloy Columbium-Vanadium of Structural Quality

1.7 QUALITY ASSURANCE

Requirements for material tests, workmanship and other measures for quality assurance shall be as specified herein and in Section 05501, "METALWORK FABRICATION, MACHINE WORK, AND MISCELLANEOUS PROVISIONS".

1.7.1 Materials Tests

Sheet piling and appurtenant materials shall be tested and certified by the manufacturer to meet the specified chemical, mechanical and section property requirements prior to delivery to the site.

1.8 SUBMITTALS

The Contractor shall submit descriptions of sheet piling driving equipment, shop drawings, test procedures, test reports and certificates, sheet piling driving records and other submittals to the Contracting Officer for approval as required. Submittals and associated work not satisfactory to the Contracting Officer will be rejected.

1.8.1 Equipment Descriptions

Complete descriptions of sheet piling driving equipment including hammers, extractors, protection caps and other installation appurtenances shall be submitted for approval prior to commencement of work. *[(The use of vibratory hammers is not allowed when the channel elevation at the London Avenue outfall gauge is at 1.8 NGVD or more.

1.8.2 Shop Drawings

Shop drawings for sheet piling, including fabricated sections, shall be submitted for approval and shall show complete piling dimensions and details, driving sequence and location of installed piling. Shop drawings shall include details and dimensions of templates and other temporary guide structures for installing piling, and shall provide details of the method of handling piling to prevent permanent deflection, distortion or damage to piling interlocks.

1.8.3 Materials Test Certificates

Materials test certificates shall be submitted for each shipment and identified with specific lots prior to installing piling. Identification data should include piling type, dimensions, section properties, heat analysis number, chemical composition, mechanical properties and mill identification mark.

1.8.4 Driving Records

Records of the sheet piling driving operations shall be submitted after driving is completed. These records shall provide a system of identification which shows the disposition of approved piling in the work, driving equipment performance data, piling penetration rate data, piling dimensions and top and bottom elevations of installed piling.

1.9 QUALITY CONTROL

1.9.1 General

The Contractor shall establish and maintain quality control for pile driving operations to assure compliance with contract specifications and maintain records of his quality control for all construction operations including, but not limited to, the following:

- (1) Accurate location, alinement and plumbness of piling.
- (2) Full and proper engagement of interlocks.
- (3) Driving (pile hammer and rate of operation).
- (4) Final position; depth of penetration; tip and cut- off elevations.
- (5) Uplift and vertical tolerances after driving.
- (6) Location and elevation of any obstruction encountered and action directed by Contracting Officer.
- (7) Pulled piles and re-driving.
- (8) Length of cover plate and weld size.
- (9) Manufacture and driving of fabricated sections.
- (10) Cutting and splicing (welding).
- (11) Stockpiling and storage.
- (12) Removal and disposal of damaged piles.

1.9.2 Reporting

The original and two copies of these records and tests, as well as the records of corrective action taken, shall be furnished the Government daily. Format of the report shall be as prescribed in Section 01451, "CONTRACTOR QUALITY CONTROL".

1.10 DELIVERY, STORAGE AND HANDLING

Materials delivered to the site shall be new and undamaged and shall be accompanied by certified test reports. The manufacturer's logo and mill identification mark shall be provided on the sheet piling as required by the referenced specifications. Sheet piling shall be stored and handled in the manner recommended by the manufacturer to prevent permanent deflection, distortion or damage to the interlocks. Storage of sheet piling should also facilitate required inspection activities.

PART 2 MATERIALS

2.1 STEEL SHEET PILING

Steel for sheet piling shall conform to the requirements of ASTM A 572, Gr 50. Sheet piling, including special fabricated sections, shall be of the type and dimensions indicated on the drawings, and be of a design such that when in place they will be continuously interlocked throughout their entire length. All sheet piling shall be provided with standard pulling holes located approximately 4-inches below the top of the pile, unless otherwise shown or directed. Steel sheet piling shall be hot rolled and shall have the properties equivalent to those listed in the following table:

PROPERTIES OF SECTIONS

Type of section	Nominal web thickness (inches)	Section modulus (in ³ /ft of wall)	Moment of inertia (in ⁴ /ft of wall)	Nominal section depth (inches)	Minimum interlock strength (lbs/lin in)	theoretical driving width (inches)
PZ 35	0.50	48.5	361.2	15	N/A	22.64

2.1.1 Substitute Sheet Pile Sections

At no additional cost to the Government, new Z-type hot rolled steel sheet piling conforming to ASTM A 572, Gr 50, with a minimum material thickness of 0.50 inches and a minimum section modulus of 48.5 in³/ft may be substituted in kind for the listed section.

2.2 Sheet Piling Lengths

All new sheet piling shall be provided in full lengths.

2.3 Rolled Corners

Rolled corners, formed with new sheet piling, shall be of the types and dimensions shown on the drawings. Any proposed variations from the details shown on the drawings shall be submitted for approval of the Contracting Officer's Representative (COR). The sheet pile types shall be as required for the corners being manufactured and shall conform to the requirements of ASTM A 572 and all other requirements stated above for new piling.

2.4 Fabricated Sections

Fabricated sections, including special corners, transition piles and tee sections, shall conform to the requirements stated herein, the details shown on the drawings and the piling manufacturer's recommendations for fabricated sections. Steel plates and angles used to fabricate the special sections shall conform to ASTM A 36. All fabricated sections shall have bolted connections and shall conform to the following: Bolted connections for fabricated sections specified shall be made from 7/8 inch diameter high strength bolts meeting the requirements of ASTM A 325, Type 3, or ASTM A 490, Type 3. The bolts shall be spaced on 6 inch centers for the length of the section except for 2 feet at each end where they are spaced on 3 inch centers. Welding of the longitudinal joint will not be allowed. Shop drawings and details for the fabricated sections shall be submitted to the Contracting Officer for approval.

PART 3 EXECUTION

3.1 INSTALLATION

3.1.1 Placing and Driving

3.1.1.1 Placing

Any excavation required within the area where sheet pilings are to be installed shall be completed prior to placing sheet pilings. Pilings shall be carefully located as shown on the drawings or directed by the Contracting Officer. Pilings shall be placed as true to line as possible. Suitable temporary wales, templates, or guide structures shall be provided to insure that the piles are placed and driven to the correct alignment. Piles shall be placed in a plumb position with each pile interlocked with adjoining piles for its entire length, so as to form a continuous diaphragm throughout the length of each run of piling wall. Interlocks shall be properly engaged. The Contractor's personnel shall not sit or place themselves on top of the sheet piling during the handling, installation, and removal of the piling.

3.1.1.2 Driving

All piles shall be driven to the depths shown on the drawings and shall extend to the cut-off elevation indicated. A tolerance of 1 inch above *(or below) the indicated cut-off elevation will be permitted. Pilings shall be driven by approved methods so as not to subject the pilings to damage and to insure proper interlocking throughout their lengths. Pile hammers shall be maintained in proper alignment during driving operations by use of leads or guides attached to the hammer. A protecting cap shall be employed in driving, when required, to prevent damage to the tops of pilings. Pilings damaged during driving or driven out of interlock shall be removed and replaced. All piles shall be driven without the aid of a water jet, unless otherwise authorized. Adequate precautions shall be taken to insure that piles are driven plumb. Sheet piling shall not be driven more than

1/8 - inch per foot out of plumb in the plane of the wall nor more than 1/8-inch per foot out of plumb perpendicular to the plane of the wall. If at any time the forward or leading edge of the piling wall is found to be out-of- plumb more than 1/8 - inch per foot in the plane of the wall or 1/8- inch per foot perpendicular to the plane of the wall, the assembled piling shall be driven to the required depth and tapered pilings shall be provided and driven to interlock with the out-of- plumb leading edge or other approved corrective measures shall be taken to insure the plumbness of succeeding pilings. The maximum permissible taper for any tapered piling shall be 1/4-inch per foot of length. Unless specifically indicated otherwise, each run of piling wall shall be driven to grade progressively from the start and pilings in each run shall be driven alternately in increments of depth to the required depth or elevation. On each day of sheetpile driving, the Contractor shall stab only the number of piles that can be driven to grade by the end of the day, and all piling stabbed shall be driven to grade by the end of each working day except that the last two piles may remain tapered up to receive the next days piles. No pile shall be driven to a lower elevation than those behind it in the same run except when the piles behind it cannot be driven deeper or in areas where there will be wall penetrations or obstructions are encountered. In this case, piling will be allowed to remain above final grade until the obstruction is removed or the penetration is completed. Alternately, if it is determined that an obstruction cannot be removed, the Contractor shall make such changes in design alignment of the pile structure as may be deemed necessary by the Contracting Officer to insure the adequacy and stability of the structure. Payment for the additional labor and materials necessitated by such changes will be made at the applicable contract prices. If the piling next to the one being driven tends to follow below final grade, it may be pinned to the next adjacent piling. *(The Contractor is advised that buried stumps, rock or similar debris may be encountered periodically on the sheet pile wall alignment and appropriate consideration should be given to hard driving conditions should they occur.)*

3.1.2 Emergency Locking System on Pile Driving Head

All pile driving equipment shall be equipped so as to prevent piles from falling when a single or multiple power failure occurs after the pile driving head is attached to the pile. The jaws of vibratory hammers shall be equipped with devices such that upon loss of hydraulic pressure, the jaws will not release the pile.

3.1.3 Cutting Off

Piles extending above grade in excess of the specified tolerance, and which cannot be driven deeper, shall be cut off to the required grade. The Contractor shall also trim the tops of piles excessively battered during driving, when directed to do so, at no cost to the Government. Cut-offs shall become the property of the Contractor and shall be removed from the worksite. Piles driven below the elevations indicated for the top of piles and piles which, because of damaged heads, have been cut off to permit further driving and

are then too short to reach the required top elevation, shall be extended to the required top elevation by welding an additional length, when directed, without cost to the Government. The Contractor may cut holes in the piles for bolts, rods, drains or utilities at locations and of sizes shown on the drawings or as directed. All cutting shall be done in a neat and workmanlike manner. Bolt holes in steel piling shall be drilled or may be burned and reamed by approved methods, which will not damage the remaining metal. Holes, other than bolt holes, shall be reasonably smooth and of the proper size for rods and other items to be inserted.

3.1.4 Inspection of Driven Piling

The Contractor shall inspect the interlocked joints of driven pilings extending above ground. Pilings found to be damaged or driven out of interlock shall be removed and replaced.

3.1.5 Pulling and Redriving

The Contractor may be required to pull selected piles after driving, for test and inspection, to determine the condition of the piles. Any pile so pulled and found to be damaged to the extent that its usefulness in the structure is impaired shall be removed from the work and the Contractor shall furnish and drive a new pile to replace the damaged pile. Piles pulled and found to be in satisfactory condition shall be redriven.

3.1.6 Void Backfill

Where voids adjacent to the steel sheet piling are induced by pile driving or pulling operations, the Contractor shall pump out all seepage and rain water and backfill with a tremie-placed slurry. The slurry shall consist of one part cement, two parts bentonite, and six parts sand mixed with enough water to produce a slurry viscous enough to thoroughly fill the voids.